

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS

1. **(Currently Amended)** A method of generating a random binary waveform containing events which occur at random intervals, the method comprising:
deriving, from a physical noise source, a first preliminary signal containing first events occurring asynchronously and at random intervals; and
multiplying the first preliminary signal with at least one further preliminary signal containing further events, said at least one further preliminary signal being a deterministic signal, so as to intersperse the first and further events;
wherein the physical noise source produces a non-deterministic output.

2. **(Canceled)**

3. **(Previously Presented)** A method of generating a random binary waveform containing events which occur at random intervals, the method comprising:
deriving, from a physical noise source, a first preliminary signal containing first events occurring asynchronously and at random intervals and multiplying the first preliminary signal with at least one further preliminary signal containing further events occurring at random intervals so as to intersperse the first and further events,

wherein said first preliminary signal and said at least one further preliminary signal is derived by level-detecting a random amplitude analog signal at respective different levels.

4. **(Previously Presented)** A method as claimed in claim 1, wherein the preliminary signals are combined by analogue multiplication.

5. **(Previously Presented)** A method as claimed in claim 1, wherein the preliminary signals are binary signals which are combined by binary multiplication.

6. **(Previously Presented)** A method as claimed in claim 5, wherein the preliminary signals are combined by an Exclusive-OR operation.

7. **(Canceled)**

8. **(Canceled)**

9. **(Previously presented)** A method as claimed in claim 1, wherein said at least one further preliminary signal is a pseudo-random binary sequence.

10. **(Previously Presented)** A method as claimed in claim 1, wherein said at least one further preliminary signal is a chaotic signal.

11. **(Previously Presented)** A method of generating a random binary waveform containing events which occur at random intervals, the method comprising:

deriving, from a physical noise source, a first preliminary signal containing first events occurring asynchronously and at random intervals and

multiplying the first preliminary signal with at least one further preliminary signal containing further events occurring at random intervals so as to intersperse the first and further events,

wherein said at least one further preliminary signal is a time-delayed version of said first preliminary signal.

12. **(Previously Presented)** A method as claimed in claim 11, wherein a time delay, producing said time-delayed version, has a value such that the correlation function of said preliminary signals for that value is substantially zero.

13. **(Previously Presented)** A method as claimed in claim 1, including producing a signal from said physical noise source and applying a spectral filter to the signal in order to obtain said first preliminary signal.

14. **(Previously Presented)** A method as claimed in claim 1, wherein the number of preliminary signals, including said first and further preliminary signals, is equal to 3 or 4.

15. **(Previously Presented)** A method of detecting objects comprising measuring the delay between transmission of a signal modulated by a random binary waveform generated by a method according to claim 1 and receipt of the reflection of the signal from the object.

16. **(Previously Presented)** Apparatus for generating a random binary waveform containing events which occur at random intervals, the apparatus comprising:

a physical noise source producing a random output signal;

means for deriving, from said random output signal, a first preliminary signal containing first events occurring asynchronously at random intervals;

means for providing at least one further preliminary signal containing further events occurring at said random intervals, said further preliminary signal being a deterministic signal; and

means for multiplying the first preliminary signal and said at least one further preliminary signal so as to produce a random binary waveform in which said first and further events are interspersed;

wherein the physical noise source produces a non-deterministic output.

17. **(Previously Presented)** An apparatus as claimed in claim 16, wherein said at least one further preliminary signal is a pseudo-random binary sequence.

18. **(Previously Presented)** A method as claimed in claim 3, wherein the number of preliminary signals, including said first and further preliminary signals, is equal to 3 or 4.

19. **(Previously Presented)** A method of detecting objects comprising measuring delay between transmission of a signal, towards an object, modulated by a random binary waveform generated by a method according to claim 3 and receipt of reflection of the signal from the object.

20. **(Previously Presented)** A method as claimed in claim 11, wherein the number of preliminary signals, including said first and further preliminary signals, is equal to 3 or 4.

21. **(Previously Presented)** A method of detecting objects comprising measuring the delay between transmission of a signal, towards an object, modulated by a random binary waveform generated by a method according to claim 11 and receipt of reflection of the signal from the object.

22. **(Currently Amended)** An apparatus for generating a random binary waveform containing events which occur at random intervals, comprising:

- a physical noise source producing a random output signal;
- a first level detector for level-detecting said random output signal using a first threshold to derive a first preliminary signal containing first events occurring asynchronously at random intervals;
- a second level detector for level-detecting said random output signal using a second different threshold to derive a second preliminary signal containing second events occurring asynchronously at random intervals; and
- means for multiplying at least said first preliminary signal and said second preliminary signal to produce a random binary waveform in which at least said first and second events are interspersed.

23. **(Previously Presented)** An apparatus for generating a random binary waveform containing events which occur at random intervals, comprising:

- a physical noise source producing a random output signal;
- means for deriving, from said random output signal, a first preliminary signal containing first events occurring asynchronously at random intervals;

delay means for delaying said random output signal to derive a second preliminary signal containing second events occurring asynchronously at random intervals; and

means for multiplying at least said first preliminary signal and said second preliminary signal to produce a random binary waveform in which at least said first and second events are interspersed.